

**Seven Years of Success
Using Institutional Controls
With Phased
Redevelopment**

San Francisco Mission Bay Redevelopment Project

Location and Background

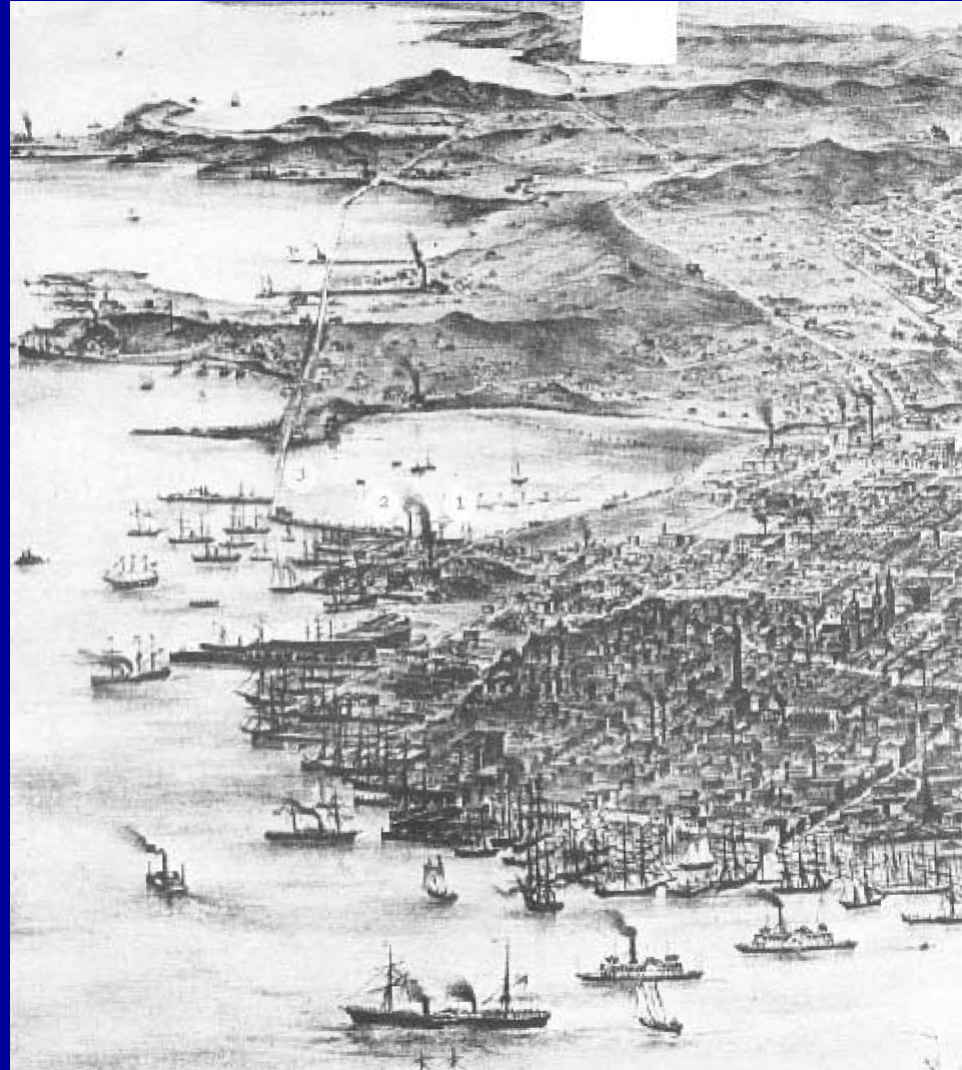
- In San Francisco south of downtown along San Francisco Bay
- Site Contains 303 acres
- Project is 7 Years Into a 30-Year Redevelopment Program



Aerial view of site

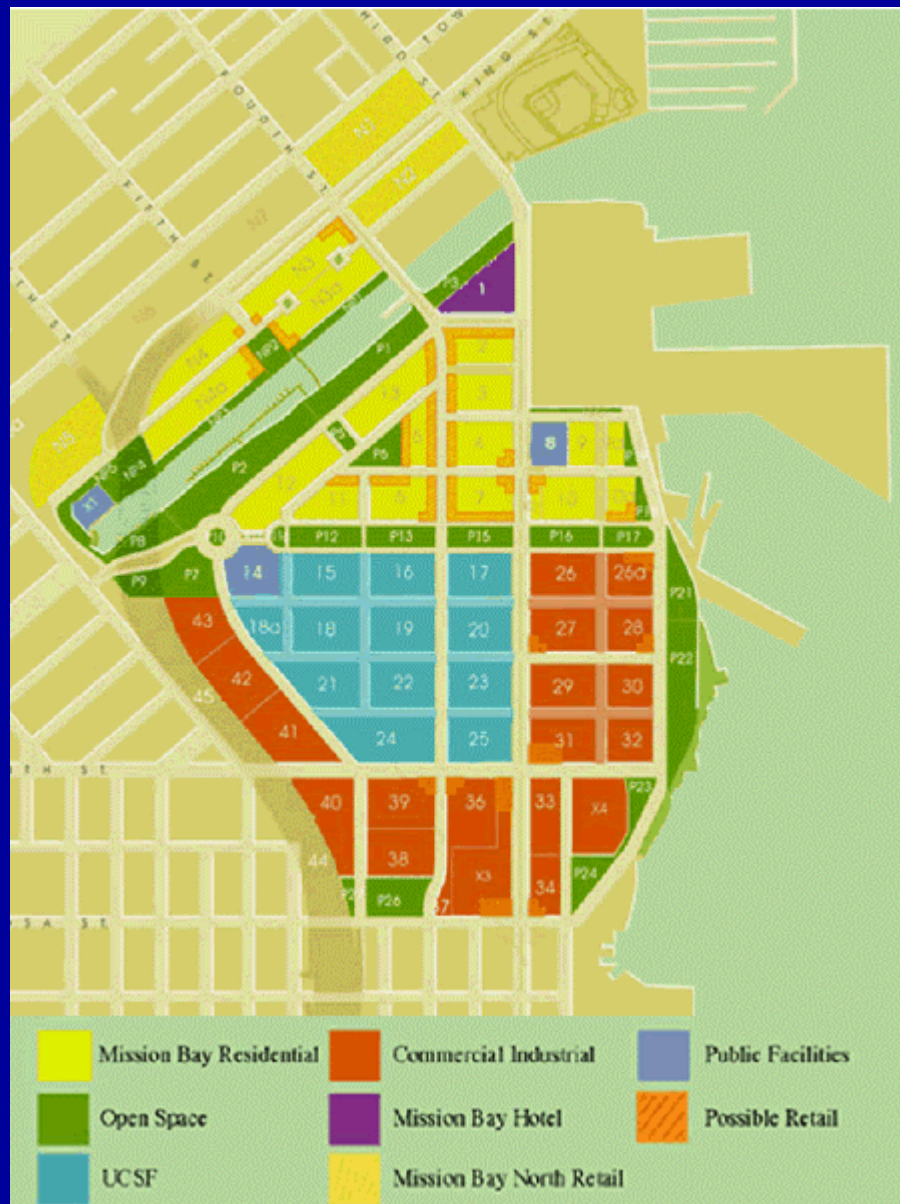
Location and Background

- Area formerly part of San Francisco Bay
- Filled at the turn of the century with earthquake rubble and refuse
- For 70 years occupied by rail yards, wood treating operations, petroleum storage, other heavy industrial activities



Thirty-Year Redevelopment Planned

- 6.0 million square feet of office, life sciences space, possible hospital
- 2.65 million square foot University of California campus
- 800,000 square feet of retail space
- 500 room hotel
- 6,000 residential units
- 49 acres of public open space
- Public school, police station, fire station



Status of Development After Seven Years

- 1.0 million square feet of commercial and institutional space
- 100,000 square feet of retail space
- 1,000 residential units
- Substantial infrastructure
- Waterside park



Previous Redevelopment Attempts Unsuccessful

- Redevelopment efforts in 1980's – 1990's
- Toxic concerns a major impediment
- Developer afraid to characterize site
- Public fears about health risks
- Created financing difficulties

Regulatory Oversight

- Site placed in California's Unified Agency Review Program
- San Francisco Regional Water Quality Control Board ("Board") assigned primary oversight
- Consulting Agencies: California Department of Toxics Substances Control and San Francisco Department of Public Health
- Board set human health standard of 1×10^{-5} (cancer risk) and a Hazard Index of 1.0

Investigation and Removal Actions

- Underground storage tanks, saturated soil located, removed
- Comprehensive area-wide sampling of soil and groundwater for broad array of chemicals
- Land use plan finalized after investigation

Investigation Results

- Various metals throughout fill in soil, groundwater
- Asbestos, inorganics in soil
- Human health standard could be met with institutional controls
- Substantial plume of heavy-end petroleum in former petroleum transfer, storage area

Remedial Scheme

- Address metals, asbestos, inorganics, residual petroleum through institutional controls
- Board issued cleanup order against oil companies for petroleum plume

Institutional Controls

- Property owners entered into environmental covenants with Board
 - Agreed to be bound by deed restrictions
 - Recorded deed restrictions against property
- Board issued certification of completion
 - Property owners protected from further remediation requirements
- Under California law, deed restrictions run with the land
 - Board can enforce through civil enforcement actions

Deed Restriction Provisions:

- Drinking ground water prohibited
- Residential uses prohibited in plume area
- Single-family homes without private front or back yards
 - Not an issue because of dense, urban development
- Owners must comply with Risk Management Plan

Risk Management Plan (RMP)

- Explains risks
- Establishes pre-development, development, post-development controls
- Establishes processes for monitoring, reporting, amendment

Pre-Development Controls

- Existing uses (industrial, commercial) only
- Fencing exposed soil areas, soil handling protocols
- Inspection, monitoring, notice

Development Controls

- Compliance with City ordinance
 - Site specific sampling for building permit, right-of-way excavation permit
 - Assures nothing missed
 - Gives City ability to enforcement risk management plan during development
 - City can issue stop work orders if conditions violated

Development Controls

- Compliance with detailed soil, groundwater management
 - Worker safety protections
 - Dust control, monitoring protocols
 - Groundwater dewatering procedures
 - Soil stockpile management requirements
- Coverage of native soil with buildings, paving or approved fill

Post-Development Controls

- Soil, groundwater contact requires adherence to RMP
- Property owners must give notices to property users

Cleanup Order for Petroleum Plume

- Oil companies ordered to investigate
- Redevelopment begun in other areas
- Cleanup plan finalized recently
 - Significant soil removal
 - Long-term residual management through RMP

Financial and Legal Responsibility

- Property owners legally responsible for RMP compliance, other restrictions
- Developers contractually responsible for development costs
- Oil companies responsible for plume investigation, excavation

Why Institutional Controls Have Worked Well

- Site well characterized so few surprises
- Low risks resulted in development-compatible controls
- Layered government enforcement assures compliance

Site Well Characterized So Few Surprises

- A few unknown underground tanks
- Isolated locations of methane

Low Risks Resulted in Development-Compatible Controls

- Soil may be moved around – except petroleum-saturated soil
- Small impact on development costs
- At-Grade minimizes soil disturbance, soil disposal costs
- Urban development design compatible with soil coverage

Layered Government Enforcement Assures Compliance With Controls

- Board oversight of all deed restriction provisions
- City site-specific testing program through local ordinance
- City oversight of controls during development process
- City establishment of public right-of-way regulations to assure all users of right-of-way comply with controls